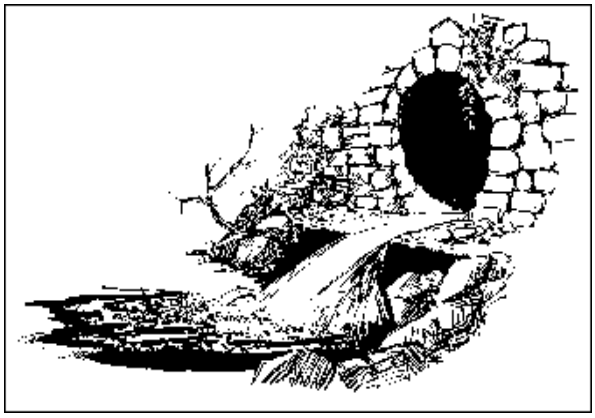
# COMBINED SEWER OVERFLOWS

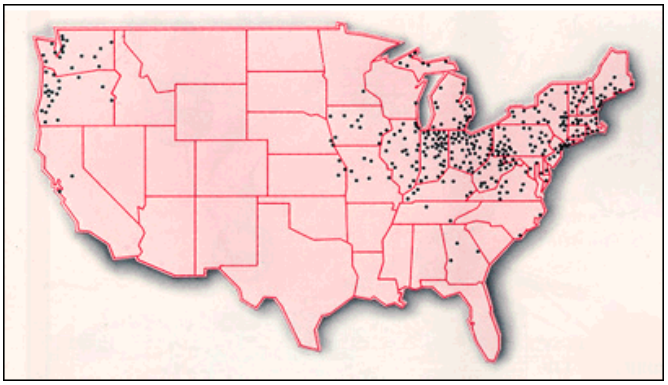
## Where are we four years after adoption of the CSO Control Policy?

***Combined sewer overflows, or CSOs, threaten water quality and public health. Controlling CSOs can be cumbersome and expensive unless local environmental priorities and financial capability are considered. EPA's 1994 CSO Control Policy addresses CSOs in a flexible, cost-effective manner that provides for local discretion and negotiated, site-specific approaches to compliance with the Clean Water Act. EPA is working with its State and municipal partners to carry out the CSO Policy in all 950 communities with combined sewer systems.***



## What are CSOs, and why are they important?

Combined sewer systems are sewers that are designed to carry sanitary wastewater and storm water in the same pipe to a sewage treatment plant. In periods of rainfall or snowmelt, the wastewater volume can exceed the capacity of the sewer system or treatment plant. For this reason combined sewer systems are designed to overflow occasionally and discharge excess wastewater directly to rivers, lakes, and estuaries.



Combined sewer systems serve about 950 communities with about 40 million people, primarily in the Northeast and Great Lakes regions. Most have populations under 10,000.

Combined sewer overflows (CSOs) contain not only storm water but also untreated human and industrial waste, toxic materials, and floating debris. They are cause beach closings, shellfishing restrictions, and other water body impairments. CSOs and other "wet weather" pollution sources cause about half of the estuary contamination nationwide.

## What is the CSO Policy?

EPA's CSO Control Policy, published April 19, 1994 (59 *Federal Register* 18688), is a national framework for control of CSOs through the wastewater permitting program (known as the National Pollutant Discharge Elimination System, or NPDES, program). It provides guidance to communities and permitting authorities on options for CSO control that will meet Clean Water Act (CWA) requirements in a flexible, cost-effective manner.

The CSO Policy resulted from a negotiated agreement among stakeholders, and provides municipalities with flexibility to develop site-specific, cost-effective solutions to their CSO problems. Since the Policy was published, EPA has released six guidance documents, sponsored outreach workshops, and worked extensively with stakeholder groups to foster implementation. States have revised their own CSO strategies to follow the 1994 Policy, and are working with communities to add CSO conditions to NPDES permits and other enforceable mechanisms.

The CSO Policy is driven by four fundamental principles:

- Clear levels of control to meet health and environmental objectives;
- Flexibility to consider the site-specific nature of CSOs and determine the most cost-effective way to comply with CWA requirements;
- Phased implementation, considering local environmental priorities and financial capability; and
- Review and revision of water quality standards, where appropriate, to reflect the site-specific wet weather nature of CSOs.

Under the CSO Policy, communities with combined sewer systems have two key responsibilities:

**1. Implement the nine minimum controls.** The nine minimum controls are measures that can reduce CSOs and their effects on water quality without requiring significant engineering studies or major construction. Communities were expected to implement the nine minimum controls by January 1, 1997.

***What are the nine minimum controls?***

*1. Proper operation and maintenance of the combined sewer system*
*2. Maximum use of the collection system for storage*
*3. Review and modification of pretreatment requirements*
*4. Maximization of flow to the publicly owned treatment works (POTW) for treatment*
*5. Prohibition of CSOs during dry weather*
*6. Control of solid and floatable materials in CSOs*
*7. Pollution prevention*
*8. Public notification of CSO occurrences and impacts*
*9. Monitoring of CSO impacts and the effectiveness of CSO controls*

**2. Develop a long-term control plan.** The CSO Policy expects CSO communities to develop long-term CSO control plans that will evaluate various strategies and identify CSO control measures to attain CWA goals. Long-term plans should include monitoring and modeling activities to characterize the impact of CSOs, and target environmentally sensitive areas such as swimming areas and drinking water supplies. EPA encourages communities to take advantage of the flexibility in the Policy and coordinate long-term control plans with efforts to control other sources of pollution in the watershed.

CSO requirements are included in the NPDES permits issued to CSO communities, typically as permits expire and are reissued. The CSO Policy provides guidance on developing permit conditions for CSOs, including considerations for small communities and communities already implementing CSO controls. The CSO Policy also encourages the use of enforcement actions such as administrative orders or civil judicial actions. Enforcement actions can contain compliance schedules and enable a community to negotiate long-term control plans with clear targets. Furthermore, enforcement actions are instrumental in ensuring that permittees comply with CSO conditions in NPDES permits. Using enforcement actions as a tool to implement the requirements of the CSO Policy is a high Agency priority.

The CSO Policy also encourages each CSO community to:

- Develop a public participation process;
- Eliminate CSOs wherever possible from environmentally sensitive areas such as beaches, shellfishing areas, and drinking water sources;
- Develop a comprehensive characterization, monitoring, and modeling plan to ensure that controls are tailored to water quality impacts; and
- Coordinate on a watershed basis with NPDES and water quality standards authorities, environmental groups, the public, and other wet weather pollution sources as control alternatives are evaluated and long-term plans developed.

## Why is the CSO Policy important?

**1. The CSO Policy addresses a significant public health and environmental threat.** The CSO Policy provides a comprehensive long-term approach to compliance with the CWA in waterways affected by CSOs. Full implementation of the CSO Policy is expected to reduce the number of beach closures, shellfish bed closures, and fish kills significantly. It is also expected to:

- Reduce the number of overflows by about 85 percent nationwide
- Reduce loadings of suspended solids from 3.7 billion pounds to 1.29 billion pounds annually
- Reduce discharges of oxygen-demanding pollutants from 1,150 million pounds to 635 million pounds annually

*CSOs in Washington, DC, discharge untreated sewage 85 times a year (a total of 1.2 billion gallons) to the Anacostia River—one of the most polluted rivers in the country due largely to bacterial counts from CSOs. CSO discharges to the Potomac River, Tidal Basin, and Rock Creek now render those waters unfit for wading and fishing.*

**2. EPA overcame inertia by listening to stakeholders.** EPA initially tried to address CSOs in its 1989 CSO Control Strategy. The 1989 Strategy focused attention on CSOs but fell short in resolving many fundamental issues since it failed to recognize the highly variable, localized nature of CSOs or provide clear, realistic guidance on how CWA goals should be met. CSO control costs – estimated at $120 billion under then-pending legislative proposals – were seen as insurmountably high. Recognizing that a different national approach was needed, and that affected stakeholders needed to be involved, EPA negotiated with municipal organizations, environmental groups, and States to reach consensus on a national framework. This framework developed into the 1994 Policy, which was endorsed by the involved stakeholders.

**3. The CSO Policy represents an innovative, flexible approach.** The CSO Policy acknowledges that the design of combined sewer systems, frequency and volume of CSOs, and impacts of wet weather impacts on waterways vary tremendously from place to place. Unlike most regulatory programs, the CSO Policy is implemented case-by-case through NPDES permits and enforcement mechanisms, giving State and local authorities broad

***What does flexibility mean?*** *Before the CSO Policy was released, CSO controls could have cost as much as $120 billion nationwide under a scenario requiring full secondary treatment of all CSOs. By encouraging communities to evaluate the attainability of CWA goals under a range of CSO control alternatives, the Policy provides for a sound level of environmental protection at $41 billion – still expensive, but far less so.*

latitude in evaluating and recommending controls. The Policy encourages communities to target environmentally sensitive waters first and acknowledges that financial capability is a factor in the phasing of long-term CSO controls.

## What's the status of implementation?

Since 1994, EPA and States have worked with CSO communities to incorporate CSO conditions into NPDES permits and other enforceable mechanisms. States have revised their own CSO strategies to be consistent with the CSO Policy. Many CSO communities have used the nine minimum controls to reduce the volume and impacts of CSOs. Many have begun to characterize their systems extensively and to develop long-term control plans that will provide for attainment of CWA requirements.

**1. Nine minimum controls.** As of April 19, 1998 – the four-year anniversary of the CSO Policy – States and EPA Regions report that slightly more than half of CSO communities are implementing the nine minimum controls. About half of the rest are required in a permit or order to implement these controls in the next year or two. (See summary table on page 5.)

**2. Long-term control plans.** States and Regions also report that about one-third of CSO communities have either completed their CSO controls or are in the process of implementing a long-term CSO control plan. Another 28 percent are under a requirement to develop a long-term plan in the next year or two. (See summary table on page 5.)

***Creative thinking allowed – and rewarded:***

*An improved understanding of its collection system has enabled **Bath, Maine** to propose storm water detention, targeted sewer separation, and off-line storage as an alternative to satellite CSO treatment facilities, lowering expected CSO control costs from $13 million to $8 million.*

*After using modeling to determine that CSOs had a lower-than-expected impact on the receiving water, **Nashville** was able to eliminate the need for CSO storage basins and saved $75 - $100 million.*

***Remington, Indiana** originally planned to separate its sewer system at a cost of $1 million. After additional analysis (including televising the entire system), Remington has shown that similar water quality improvements at dramatic savings (up to 50 percent), are possible through a series of smaller-scale system upgrades and optimization projects.*

***Philadelphia** is taking maximum advantage of its existing infrastructure before constructing long-term controls, relying on extensive inspections, computer modeling, and rehabilitation techniques consistent with the nine minimum controls. Philadelphia estimates that such a "characterize and optimize" approach has lowered CSO volume by 1 billion gallons per year. Additional CSO controls will be developed through a watershed approach.*

***Portland, Oregon** is using low-tech, low-cost "Cornerstone Projects" such as roof drain disconnection, stream diversion, and storm water infiltration sumps that will reduce CSO volume by nearly half (at one-third the total program cost), resulting in significant savings in storage and treatment controls.*

EPA is committed to working with States and communities to achieve full implementation of the nine minimum controls and development of long-term control plans as soon as possible. Implementation of these and other aspects of the CSO Policy continues to be a high priority for the Agency.

(More information about the CSO Policy is available at http://www.epa.gov/OWM/cso.htm.)